Big Data Analytics for the Social Security Smart (SSS) Card (National Identity Card) Usage for All Citizens

Ambiga
Sri Akilandeswari Women's College, Tamilnadu, India
ambiga2876@gmail.com

Abstract: Discovering the data for the smart card is the collection of data and the development of an application for the social security smart card for the Indian citizen also the design of this application. A smart card is designed is look like typically a type of chip card, is a plastic card that contains an embedded computer chip–either a memory or microprocessor type–that stores and transacts data. The social security card contains only one social security number and the usage of this card is to provide a single card for all the purposes. It can be distributed to all the citizens of India with a Security number. This number is the identity in future for various purposes. With this tracking of a particular person in a particular place is easy. It is used to transact the money only in digital (numbers), not in rupees. It eliminates the money and paperwork. Using this card the wages will be credited to this card.
Keywords: Data Mining, Smart Card, Techniques, Application.

INTRODUCTION

The smart card or national identity card can be used for any kind of purpose. It can hold or store the personal details, educational details, asset details, voting details, ration details, employment details, passport details, banking details, online shopping details, salary details, mobile details, various electronics item details at home, certificates of various such as education and any other, loan details, life insurance details, legal activities details, vehicles at home or purchased details, expenditure details, gifts or credits, any other assets.

1. Collection of data for smart card or national identity card

The card can include biometric identification data, cards can provide superior two- or three-factor authentication. This card includes the social security number(it can be a fixed digit number), personal details such as father name, mother name, spouse name, brother name, sister name , son name, daughter name, blood group, contact no, address. If all the people are provided with this security number it can be related to each other easily. It satisfies all the needs of the people in future .money will be eliminated in future. The people have to carry this one card for all.

2. Big data analytics techniques to social security smart card

The cards make it easy for stores to track who is buying what, when they are buying it and at what price. The stores can then use this data, after analyzing it, for multiple purposes, such as offering customers discounts targeted to their buying habits and deciding when to put items on sale or when to sell them at full price. Data mining can be a cause for concern when only selected information, which is not representative of the overall sample group, is used to prove a certain hypothesis.

3. Data mining and smart card

- Detect fraud abuses in medical/hospitals
- For making customer relationship, it helps for exploring the business.
- Doing patient activity analysis, how many visits they did and for which reason.
- To identify successful therapy for different illnesses.
- with the help of data mining we can analyse the customer behavior, what are purchasing, which type of activity they are doing, again and again, their previous activities, by doing this process we can get a lot of information for doing business analytics.
- To analyse their plans which they provide to the customers, what was the response of the customer, they mine the data and get all info.
- To get the info of credit card spending (what they are buying) by the customers using data mining.

- In marketing data mining is very effective and useful tool, all marketing analyst use data mining to analyse the customer behaviour what they are buying, and according to that, they make the offers for them.
- They mine the data according to customer purchase, that what they missed, what they are looking again and again, what is the range of spending money of the customer according to that they plan their business.
- It is a classic technique for data mining. This technique depends on predictions; here we classify the data in some groups or individual. Predictions are done by some predefine techniques.
- A bank officer who has the authority to approve the loan of any person then he has to analyse customer behaviour to decide passing the loan is risky or safe that is called classification.

4. Applying data mining techniques to smart card
4.1 Communications
In an overloaded market where competition is tight, the answers are often within your consumer data. Multimedia and telecommunications companies can use analytic models to make sense of mountains of customers data, helping them predict customer behaviour and offer highly targeted and relevant campaigns.

4.2 Insurance
With analytic know-how, insurance companies can solve complex problems concerning fraud, compliance, risk management and customer attrition. Companies can use the smart card with data mining techniques to price products more effectively across business lines and find new ways to offer competitive products to their existing customer base.

4.3 Education
With unified, data-driven views of student progress, educators can predict student performance before they set foot in the classroom – and develop intervention strategies to keep them on course. The smart card with Data mining helps educator access student data, predict achievement levels and pinpoint students or groups of students in need of extra attention.

4.4 Manufacturing
Aligning supply plans with demand forecasts is essential, as is early detection of problems, quality assurance and investment in brand equity. Manufacturers can predict wear of production assets and anticipate maintenance, which can maximize uptime and keep the production line on schedule using their smart card with data mining technology.

4.5 Banking
Automated algorithms help banks understand their customer base as well as the billions of transactions at the heart of the financial system. Data mining in smart cards helps financial services companies get a better view of market risks, detect fraud faster, manage regulatory compliance obligations and get optimal returns on their marketing investments.

4.6 Retail
When we apply for a smart card in retail it can help large customer databases hold hidden insights that can help you improve customer relationships, optimize marketing campaigns and forecast sales. Through more accurate data models, retail companies can offer more targeted campaigns – and find the offer that makes the biggest impact on the customer.

5. Data Mining Applications with smart card
The smart card can be the best choice in the following areas
- Financial Data Analysis
- Retail Industry
- Telecommunication Industry
- Biological Data Analysis
- Other Scientific Applications
- Intrusion Detection

5.1 Financial Data Analysis
The financial data in banking and financial industry is generally reliable and of high quality which facilitates systematic data analysis and data mining. Some of the typical cases are as follows
- Design and construction of data warehouses for multidimensional data analysis and data mining.
- Loan payment prediction and customer credit policy analysis.
- Classification and clustering of customers for targeted marketing.
- Detection of money laundering and other financial crimes.

5.2 Retail Industry
Data Mining has its great application in Retail Industry because it collects a large amount of data from on sales, customer purchasing history, goods transportation, consumption, and services. It is natural that the quantity of data collected will continue to expand rapidly because of the increasing ease, availability, and popularity of the web. Data mining in the retail industry helps in identifying customer buying patterns and trends that lead to improved quality of customer service and good customer retention and satisfaction. Here is the list of examples of data mining in the retail industry

- Design and Construction of data warehouses based on the benefits of data mining.
- Multidimensional analysis of sales, customers, products, time and region.
- Analysis of the effectiveness of sales campaigns.
- Customer Retention.
- Product recommendation and cross-referencing of items.

5.3 Telecommunication Industry

Today the telecommunication industry is one of the most emerging industries providing various services such as fax, pager, cellular phone, internet messenger, images, e-mail, web data transmission, etc. Due to the development of new computer and communication technologies, the telecommunication industry is rapidly expanding. This is the reason why data mining is become very important to help and understand the business.

Data mining in telecommunication industry helps in identifying the telecommunication patterns, catch fraudulent activities, make better use of the resource, and improve the quality of service. Here is the list of examples for which data mining improves telecommunication services −

- Multidimensional Analysis of Telecommunication data.
- Fraudulent pattern analysis.
- Identification of unusual patterns.
- Multidimensional association and sequential patterns analysis.
- Mobile Telecommunication services.
- Use of visualization tools in telecommunication data analysis.

5.4 Biological Data Analysis

In recent times, we have seen a tremendous growth in the field of biologies such as genomics, proteomics, functional Genomics and biomedical research. Social security Smart card with Biological data mining is a very important part of Bioinformatics. Following are the aspects in which data mining contributes for biological data analysis −

- Semantic integration of heterogeneous, distributed genomic and proteomic databases.
- Alignment, indexing, similarity search and comparative analysis multiple nucleotide sequences.
- Discovery of structural patterns and analysis of genetic networks and protein pathways.
- Association and path analysis.
- Visualization tools in genetic data analysis.

5.5 Other Scientific Applications

The applications discussed above tend to handle relatively small and homogeneous data sets for which the statistical techniques are appropriate. A Huge amount of data has been collected from scientific domains such as geosciences, astronomy, etc. A lot of data sets is being generated because of the fast numerical simulations in various fields such as climate and ecosystem modeling, chemical engineering, fluid dynamics, etc. Following are the applications of a smart card with data mining in the field of Scientific Applications and research. The research using this card can protect their document and articles, publication.

- Data Warehouses and data Pre-Processing.
- Graph-based mining.
- Visualization and domain specific knowledge.

5.6 Intrusion Detection

Intrusion refers to any kind of action that threatens integrity, confidentiality, or the availability of network resources. In this world of connectivity, security has become the major issue. With increased usage of internet and availability of the tools and tricks for intruding and attacking network prompted intrusion detection to become a critical component of network administration. Here is the list of areas in which smart card with data mining technology may be applied for intrusion detection −

- Development of data mining algorithm for intrusion detection.
- Association and correlation analysis, aggregation to help select and build discriminating attributes.
- Analysis of Stream data.
- Distributed data mining.
- Visualization and query tools.

5.7 Trends in smart card with Data Mining techniques

Data mining concepts are still evolving and here are the latest trends that we get to see in this field in the development of smart card.

- Application Exploration.
- Scalable and interactive data mining methods.
- Integration of data mining with database systems, data warehouse systems, and web database systems.
- Standardization of data mining query language.
- Visual data mining.
- New methods for mining complex types of data.
- Biological data mining.

- Data mining and software engineering.
- Web mining.
- Distributed data mining.
- Real-time data mining.
- Multi-database data mining.
- Privacy protection and information security in data mining.

6. Need of Smart Cards

Smart cards improve the convenience and security of any transaction. They provide tamper-proof storage of user and account identity. Smart card systems have proven to be more reliable than other machine-readable cards, like magnetic stripe and barcode, with many studies showing card read life and reader life improvements demonstrating the much lower cost of system maintenance. Smart cards also provide vital components of system security for the exchange of data throughout virtually any type of network. They protect against a full range of security threats, from careless storage of user passwords to sophisticated system hacks. The costs to manage password resets for an organization or enterprise are very high, thus making smart cards a cost-effective solution in these environments. This card can also be used to manage network system access and store value and other data. Worldwide, people can use smart cards for a wide variety of daily task. They can pay for traveling in bus, train, airways.

7. Purpose of this card

 Everything can be done using this smart card. The purposes of this card are to carry personal account, credit and buying preference, voting, collecting ration, transportation, parking, laundry, gaming, retail, hotel, educational institution and entertainment and in mobile phone also. Available applications now include identity, travel documents, drivers license, health information, an electronic wallet, healthcare , act as credit or debit card, ATM bank card, public toll-road and transit payments. Chip card scan also is used for everything from visiting libraries to buying groceries to attending movies, firmly integrating them into our everyday lives.

8. Importance of social security smart card

The most prominent application of smart card such as the GSM digital cellular phones. Stored value is more convenient and safer than cash. For issues, the float is realized on unspent balances and residuals on balances that are never used.
Smart cards can also act as keys to machine settings for sensitive laboratory equipment and dispensers for drugs, tools, library cards, health club equipment etc. In some environments, smart card enabled- SD and micro SD cards are protecting digital content as it is being delivered to the mobile handsets/phones.

Small payments
- Micro Payments - paying nominal costs without transaction fees associated with credit cards, or for amounts too small for cash, like reprint charges.

Smart Cards in banks
- Smart cards increase trust through improved security. Two-Factor Authentication ensures protection of data and value across the internet. Threats such as the "Man in the middle" and "Trojan Horses" that replay a username and password are eliminated
- This is improving customer service. Customers can use secure smart cards for fast, 24-hour electronic funds transfers over the internet
- Costs are reduced: transactions that normally would require a bank employee's time and paperwork can be managed electronically by the customer with a smart card

Health care systems
- Rapid, accurate identification of patients improved treatment to the patients Reducing fraud through authentication of provider/patient visits and insurance eligibility
- A convenient way to carry data between systems or to sites without systems
- Reducing record maintenance costs

Embedded Medical Device Control
For years, embedded controllers have been in many types of machines, governing the quality and precision of their function. In Healthcare, embedded smart cards ensure the best and safest delivery of care in devices such as dialysis machines, blood analyzers and laser eye surgery equipment.

Schools
Smart cards are being provided to students at some schools and colleges for tracking student attendance.
- As an electronic purse to pay for items at canteens, vending machines, laundry facilities, etc.
- Tracking and monitoring food choices at the canteen, to help the student maintain a healthy diet
- Tracking loans from the school library
- Access control for admittance to restricted buildings, dormitories and other facilities. This requirement may be enforced at all times (such as for a laboratory containing valuable equipment), or just during after-hours periods (such as for an

academic building that is open during class times, but restricted to authorized personnel at night), depending on security needs.
- Access to transportation services

Healthcare
Smart health cards can improve the security and privacy of patient information, provide a secure carrier for portable medical records reduce health care fraud, support new processes for portable medical records, provide secure access to emergency medical information, enable compliance with government initiatives (e.g., organ donation) and mandates, and provide the platform to implement other applications as needed by the health care organization.

Smart cards and electronic commerce
Smart cards can be used in e-commerce. Over the Internet, though the business model used in current electronic commerce applications still, cannot use the full potential of the electronic medium. An advantage of smart cards for electronic commerce is their use is to customize services. For example, in order for the service supplier to deliver the customized service, the user may need to provide each supplier with their profile, a boring and time-consuming activity. A smart card can contain a non-encrypted profile of the bearer so that the user can get customized services even without previous contacts with the supplier.

Other uses
Smart cards are widely used to protect digital television streams. Video guard is a specific example of how smart card security worked.
Smart cards can be physically disassembled by using acid, abrasives, solvents, or some other technique to obtain unrestricted access to the onboard microprocessor. Although such techniques may involve a risk of permanent damage to the chip, they permit much more detailed information (e.g., photomicrograph) to be extracted.

Benefits
The benefits of smart cards are directly related to the volume of information and applications that are programmed for use on a card. A single contact/contactless smart card can be programmed with multiple banking credentials, medical entitlement, driver's license/public transport entitlement, loyalty programs and club memberships to name just a few. Multi-factor and proximity authentication can and has been embedded into smart cards to increase the security of all services on the card. For example, a smart card can be programmed to only allow a contactless transaction if it is also within range of another device like a uniquely paired mobile phone. This can significantly increase the security of the smart card.
Individuals have better security and more convenience with using smart cards that perform multiple services. For example, they only need to replace one card if their wallet is lost or stolen. The data storage on a card can reduce duplication, and even provide emergency medical information.

Advantages
The first main advantage of smart cards is their flexibility. Smart cards have multiple functions which simultaneously can be an ID, a credit card, a stored-value cash card, and a repository of personal information such as telephone numbers or medical history. The card can be easily replaced if lost, and, the requirement for a PIN (or another form of security) provides additional security for unauthorized access to information by others. At the first attempt to use it illegally, the card would be deactivated by the card reader itself.
The second main advantage is security. Smart cards can be electronic key rings, giving the bearer ability to access information and physical places without the need for online connections. They are encryption devices so that the user can encrypt and decrypt information without relying on the unknown, and therefore potentially untrustworthy, appliances such as ATMs. Smart cards are very flexible in providing authentication at a different level of the bearer and the counterpart. Finally, with the information about the user that smart cards can provide to the other parties, they are useful devices for customizing products and services.
Other general benefits of smart cards are:
- Portability
- Increasing data storage capacity
- Reliability that is virtually unaffected by electrical and magnetic fields.

CONCLUSION
This smart card can be used in future eliminating money transactions. It is easy to carry and also easy to use. With a little modification, it can be used for other countries also.

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